

C O M M U N I T Y N E W S**JSC donors' blood put to good use at St. Luke's Hospital**

Blood makes life possible. And this miraculous fluid enables hospitals to function.

These were the primary messages about a dozen JSC employees were given during their recent tour of St. Luke's Episcopal Hospital. They got a firsthand look at how blood donated to St. Luke's during JSC's annual blood drives is put to use saving lives. Attendees toured the cardiac catheterization laboratory, the Texas Heart Institute and the blood lab and viewed a cardiovascular operation in progress.

"About fifty times each year, we implant something known as a left ventricular assist device," said Dr. Arthur Brace, medical director, Blood Bank and Transfusion Service, St. Luke's Episcopal Hospital. "These devices take the place of the normal heart function. We wouldn't be able to perform these surgeries without blood donations. Ten to twenty units of red blood cells are needed to do this surgery."

Since 1992, there has been a continued increase in the use of blood. More than 100 units of blood are transfused at the hospital on peak days. Cardiovascular surgical patients receive more than 50 percent of all blood donations. Coupled with this increasing demand for blood, the existing donor base has been declining due to more stringent testing that potential donors must undergo.

"The bottom line is that we see a continued need for blood," said Brace. "For this reason, we really appreciate your efforts."

Modern medicine has developed numerous new procedures to save lives. These include bone marrow and liver transplants, new cardiovascular procedures and a range of other



Viewing a catheter used for cardiac operations are, from left, Rothe Joint Venture employee Rudy Marent and JSC civil servants Joe Rogers and Pam McCraw.

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aggressive therapies. But none of this progress would be possible without blood products. In addition, according to Brace, "we wouldn't be able to make advances in treating sickle cell anemia, immune deficiency, cancer and other diseases without blood donors."

Given the additional testing that blood donors must now undergo, maintaining an adequate blood supply is a challenge for the hospital. And donors who give on a consistent basis – such as many JSC employees – are rare finds.

"Many of you have donated blood many times," said Stephanie Logsdon,

manager of the Blood Donor Program, St. Luke's Episcopal Hospital. "That's really an advantage for us when we have to talk to patients and their families about the safety of our blood supply. I can point out groups such as yours. Not only do I have years of testing on many of you, but we have many patients who have been transfused and done well with your blood."

St. Luke's personnel have learned how to increase the blood donor base from their association with JSC. "I want to thank you all for what you do for us," said Linda Wesley, administrative director, Department of Pathology, St. Luke's

Episcopal Hospital. "When we talk about how we might increase our donor base, we try to learn from you because you do a terrific job of bringing in new donors year after year."

St. Luke's cardiac catheterization laboratories are the largest and most fully equipped catheterization labs in the world. More than 10,500 diagnostic and cardiac catheterization procedures are performed in the cath labs annually.

In cardiac catheterization, a thin catheter is inserted through an artery or vein and advanced into the major vessels and heart chambers. Depending on the type, catheters can be used to measure pressure, view the inside of blood vessels, widen a narrowed heart valve, or clear a blocked artery.

Located in St. Luke's Hospital, the Texas Heart Institute is a nonprofit organization devoted to advancing the understanding and treatment of cardiovascular disease through programs in research, education and patient care. Its work is made possible by a combination of philanthropy, government grants and research contracts.

According to Mike McGee, vice president of research administration, Texas Heart Institute, researchers are currently developing new heart pumps and new artificial hearts. Promising new work in gene therapy – releasing genetically engineered materials into the heart to cause cells to behave properly – has also begun.

Attendees ended their visit with a tour of the blood lab and a demonstration of how blood is tested, centrifuged to break it down into its cellular components, packaged and stored. ■

Clear Creek, JSC team prepares for pillow fight in Orlando

By Norm Chaffee

THE PHILLIPS GYMNASIUM in Pasadena was the site of a practice "pillow fight" on February 21 as JSC's robot sparred with a robot from Pasadena to train for this year's robotic competition.

For the third year, JSC and contractor engineers and machinists are teaming with students and teachers from the Clear Creek Independent School District to enter the annual national robotic competition sponsored by FIRST (For Inspiration and Recognition of Science and Technology), to be held in late April for the fifth consecutive year at Disney's Epcot Center in Orlando, Fla.

FIRST, a nonprofit educational organization, promotes the excitement of engineering, science and technology among high school students by sponsoring annual robotics competitions across the country. This is the eighth year that the organization has sponsored a national contest.

A series of seven regional competitions were held throughout the country in February and March, prior to the nationals. A total of 281 teams will be competing this year, regionally or nationally. NASA Headquarters and field centers are sponsoring several teams again this year, and regional competitions are being hosted at Ames Research Center and at the Kennedy Space Center.

Teams are comprised of high school students and teachers working in collaboration with engineers and machinists from sponsoring organizations.

The competition simulates a real-world project in that the teams have only a seven-week period to conceive, design, build, test, modify and train with their robot prior to shipping it to the competition site. This year the teams received the competition requirements and rules on January 9 and were required to ship the completed robot by February 24.

"We've got an awesome robot this year," said Terry Brandhorst, the K-12 science coordinator for CCISD, who organized the student and teacher involvement this year. "And we wrapped it up with plenty of time to spare," boasted Scott Askew of JSC's Automation, Robotics and Simulation Division, who was JSC's team leader, as he watched the robot depart from the practice area in Bldg. 9 on February 24.

The JSC/CCISD team includes students and teachers from Clear Creek, Clear Brook, and Clear Lake high schools, and engineers and machinists from several JSC divisions and contractor organizations. Other teams in the Houston area include Pasadena ISD/Houston Lighting and Power Co.; Friendswood ISD/Oceanering Space Systems; Houston ISD (Booker T. Washington Engineering Magnet High School)/Brown and Root/Exxon; and Conroe ISD (Oak Ridge High School)/Hitachi.

This year's unique competition game, devised by the mechanical engineering faculty and students at the Massachusetts Institute of Technology, requires two teams of two robots each to compete with one another during a series of two-minute rounds in a 24-foot by 27-foot rectangular arena. Within the arena is a movable six-foot-wide octagonal platform called the "puck." It is five inches high and mounted on casters so that it can be moved.

The game requires the robot to pick up thin circular items, called "floppies," that are 30 inches in diameter. Each floppy has a central Velcro button and a strip of Velcro around its periphery, which can be used to pick it up. Each robot scores one point for each floppy it can pick up. The score increases to

three points per floppy if the robot can raise it at least eight feet in the air. In addition, if the robot can use the "puck" to lift itself at least two inches off the ground, the floppy score is tripled. The robot may elevate itself by grabbing the "puck" or by climbing up on it. And finally, if the puck can be shoved into the opponent's side of the arena when the match time expires, all other scores are doubled.

Each team has ten floppies, and the floppies can be loaded onto the robot by a lifting device on the machine or can be placed or thrown onto the robot by a human player who must stand in a

pre-designated location. The robots are driven by radio control by the student members who can control the functions of locomotion, steering, picking up floppies, lifting the floppies above eight feet, lifting the entire robot off the floor, and controlling the puck.

In each competition two robots are randomly paired just prior to the match. The teams must devise a cooperative strategy to jointly acquire and control the floppies and the puck, while attempting to foil the efforts of their two opponents. This is the first year in which the game involved an alliance among robots.

To prepare for this year's national competition, the local area teams arranged for a mini-competition at Pasadena ISD's Phillips gymnasium on February 21. The CCISD and Pasadena ISD robots were able to participate in the competition and successfully demonstrate their capabilities, viewed by a crowd of interested spectators, parents, teachers and students.

The enthusiasm and spirit of the JSC/CCISD team at the Pasadena mini-competition was high, and great results are expected in Orlando. But the students themselves demonstrate the best results of the competition. "Several kids who didn't know much about engineering are now planning to study engineering in college," said Josh Mehling, a Clear Creek High School senior and one of the student leaders of the team. And privately he admitted that the last two years' work on the team has helped him gain admission to several fine universities and receive substantial scholarship offers. That's the kind of result that really counts. ■

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